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Bong-gi Kim

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BONG-GI KIM

Appeal 2008-0869
Application 10/076,075
Technology Center 2600

Decided: June 23, 2008

Before KENNETH W. HAIRSTON, MAHSHID D. SAADAT, and
ROBERT E. NAPPI, *Administrative Patent Judges*.

SAADAT, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from a Final Rejection of claims 1, 3-15, 17, and 18. Claims 2 and 16 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

Appellant has invented an optical pickup device wherein a holographic optical element (HOE) is formed on a surface of a beam splitter to compensate for a deviation between optical axes of the first and second light beams transmitted through the first surface (Spec. ¶ [0013]).

According to Appellant, using an HOE separately from a beam splitter increases the cost of manufacturing and adds to the complexity of the device (Spec. ¶ [0009]).

Claim 1 is representative of the claims on appeal and read as follows:

1. An optical pickup apparatus comprising:

a first light source to generate a first light beam;

a second light source to generate a second light beam whose optical axis is parallel to the optical axis of the first light beam, the second light source being disposed optically farther from a recording medium than the first light source;

a photodetector to receive the first light beam and the second light beam which are emitted from the first and second light sources, respectively, and which are reflected from the recording medium and performing photoelectric conversion;

an objective lens to focus the first light beam and second light beam on the recording medium, the objective lens being disposed on an optical path between the first and second light sources and the recording medium; and

a beam splitter disposed on an optical path between the objective lens and the photodetector, the beam splitter having a first surface to reflect the first light beam and the second light beam toward the objective lens and simultaneously transmitting the first light beam and the second light beam, and a second surface on which a hologram is formed to compensate for a deviation between optical axes of the first and second light beams transmitted through the first surface,

wherein the hologram is formed to diffract the first light beam into a relatively more +1-order diffracted light beam and relatively less residual light, and to diffract the second light beam into a relatively more zero-order diffracted light beam and relatively less residual light, and

wherein the optical axis of the first light beam is parallel to the optical axis of the second light beam before the first and second light beams are reflected by the beam splitter and after the first and second light beams are reflected by the beam splitter.

The Examiner relies on the following prior art references in rejecting the claims on appeal:

Ono	US 5,659,531	Aug. 19, 1997
Ando	US 6,392,977 B2	May 21, 2002

Appellant's Admitted Prior Art (APA) disclosed in ¶ [0004] and Figure 1.

Claims 1, 3-15, 17, and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of Ono and APA.

We make reference to the Briefs and Answer for Appellant's and the Examiner's arguments. Only those arguments actually made by Appellant have been considered in this decision. Arguments which Appellant could have made but did not make in the Briefs have not been considered and are deemed waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

We affirm.

ISSUE

The issue on appeal turns on whether under 35 U.S.C. § 103, the combination of Ando with Ono and APA, as proposed by the Examiner, teaches or suggests the claimed subject matter, and specifically, the claimed arrangement of the hologram formed on the beam splitter.

PRINCIPLES OF LAW

To reach a conclusion of obviousness under § 103, the Examiner bears the burden of producing a factual basis supported by a teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Our reviewing court requires this evidence in order to establish a *prima facie* case. *In re Piasecki*, 745 F.2d 1468, 1471-72 (Fed. Cir. 1984).

Furthermore, the test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *See In re Kahn*, 441 F.3d 977, 987-88 (Fed. Cir. 2006), *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991) and *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007).

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Leapfrog Enter., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (quoting *KSR*, 127 S. Ct. at 1739). The Court also said that “the obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation.” *KSR*, 127 S. Ct. at 1741. “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for

which there was an obvious solution encompassed by the patent's claims.” *KSR*, 127 S. Ct. at 1742.

The *KSR* Court further recognized that “[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.” *KSR*, 127 S. Ct. at 1742. In such circumstances, “the fact that a combination was obvious to try might show that it was obvious under § 103.” *Id.*

ANALYSIS

Initially, we note that Appellant does not dispute whether Ando teaches all the claimed limitations except for a hologram formed on the second surface of the beam splitter and parallel optical axis of the two light beams before and after they are reflected by the beam splitter. In that regard, Appellant asserts that both Ando and APA show the hologram separate from the beam splitter (App. Br. 16).

Appellant’s arguments focus on the function of the hologram disclosed in Ono and indicate that there is no suggestion to one of ordinary skill in the art to use Ono’s hologram element 216 in the optical apparatus of Ando since Ono does not correct the spherical aberration recognized in Ando (App. Br. 17; Reply Br. 7). Appellant further asserts that, even if combinable with Ando, Ono does not disclose or suggest that “a hologram is formed to compensate for a deviation between optical axes of the first and second light beams transmitted through the first surface,” as recited in claim 1 (App. Br. 16; Reply Br. 4).

The Examiner relies on Ono for disclosing a hologram element formed on a beam splitter in an optical head device and on APA for teaching that the optical axis of the first light beam is parallel to the optical axis of the second light beam before and after the beams are reflected by the beam splitter (Ans. 5-6). To support the obviousness of the subject matter of claim 1, the Examiner points out that Ando teaches using a hologram for compensating between the optical axes of the first and second light beams while the placement of the hologram on the beam splitter is taught by Ono (Ans. 6-7).

A review of Ono reveals that the reference teaches a hologram element formed on a beam splitter (Fig. 11A, 15; col. 7, ll. 36-46 and col. 9, ll. 15-27). In particular, the embodiment depicted in Figure 15 clearly shows that beam splitter 218 has first and second surfaces, wherein a hologram element 216 is formed on the second surface (col. 9, ll. 17-19). Ono describes the benefits of using the hologram element to be related to focusing and detecting focusing error signals (col. 2, ll. 41-48; col. 7, ll. 40-46; col. 9, ll. 48-51).

We disagree with Appellant that one of ordinary skill in the art would not have combined the teachings of Ando with those of Ono and APA. The benefits of using the hologram in correcting spherical aberration as well as focusing and tracking error signal detection are described in Ando and Ono to be the result of adding a hologram element to the signal path to the detector and specifically, on the second surface of the beam splitter. We observe that Appellant also recognizes the deviation between optical axes of the light beams in the context of focusing problem (Spec. ¶ [0005]).

Appellant specifically points to using a hologram element in the conventional optical pickup devices depicted in Figure 1 to compensate for a deviation between the optical axes by diffracting the two light beams and “thereby focusing the first light beam 13a and the second light beam 15a at a predetermined focal point on the photodetector 29” (Spec. ¶ [0008]). Therefore, the mere presence of a hologram element, such as the hologram element in Ando and Ono, ensures that the deviation between the optical axes is compensated for and thus, proper focusing is achieved.

Therefore, we find that Ono’s teaching that forming the hologram element on the beam splitter helps with the desired focusing level and tracking error signal detection while the integral structure of the beam splitter and the hologram results in a more compact and light weight optical head device provides proper suggestion in Ono for the proposed combination. (*See* Ono, Abstract). We further observe that the solution suggested by Ono for reducing complexity by forming the hologram on the beam splitter is also consistent with Appellant’s disclosure regarding the need for a lower cost optical pickup apparatus when a hologram is used separately from the beam splitter (Spec. ¶ [0009]).

Based on our findings above with respect to Ando and Ono and consistent with the *KSR* holding, the proposed combination provides an obvious solution for a known problem, which is among the predictable solutions available to one of ordinary skill in the art. Thus, we find that Ono’s hologram element formed on the beam splitter is being used for nothing more than its intended purpose of providing better focusing with predictable results of compensating for a deviation between the optical axes of the two light beams and focusing the error signal.

CONCLUSION

In view of our analysis above, we find that the teachings of Ando in combination with Ono and APA, when considered as a whole, support the Examiner's obviousness rejection of claim 1. Appellant has not presented any substantive arguments directed separately to the patentability of claims 3-15, 17, and 18 (App. Br. 18), allowing these claims to fall with the representative independent claim 1. *See In re Young*, 927 F.2d at 590. Thus, we sustain the 35 U.S.C. § 103(a) rejection of claims 1, 3-15, 17, and 18 over Ando, Ono, and APA.

ORDER

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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